GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
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www.gel.com

January 07, 2015

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF X15-004
Work Order: 363428
SDG: GEL363428

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 18, 2014. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

Hope Taylor for
Heather Shaffer
Project Manager

Purchase Order: 300071ES20 - 7H
Chain of Custody: X15-004-014
Enclosures

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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF X15-004
SDG: GEL363428

January 07, 2015

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on December 18, 2014, for analysis. The sample was delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative and DER

Sample Identification
The laboratory received the following sample:

Laboratory Identification	Sample Description
363428001	B2Y452

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: GC/MS Volatile.

This package, to the best of my knowledge, is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manger (or designee) and the laboratory's client services representative as verified by their signatures on this report.

January 12, 2015

Hope Taylor for
Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

363428

C.O.C. # X15-004-014

Page 1 of 1

Collector	S.W. King/CHPRC	**Contact/Requester**	WATERS-HUSTED, K	**Telephone No.**	376-4650
SAF No.	X15-004	**Sampling Origin**	HANFORD SITE	**Purchase Order/Charge Code**	300071ES20
Project Title	GW Sitewide Surv, FY15	**Logbook No.**	HNF-N-506 71 / 30	**Ice Chest No.**	GWS-425
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7722 8404 8685
Protocol	SURV	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	5287

POSSIBLE SAMPLE HAZARDS/REMARKS

*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

Batch with A, I, S, and W SAFs.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2Y452	N	W	DEC 17 2014	1005	4x40-mL aGs*	8260_VOA_GCMS: COMMON	14 Days	HCl or H2SO4 to pH <2/Cool <=6C

January 12, 2015

	Print	Sign	Date/Time		Print	Sign	Date/Time
Relinquished By	S.W. King/CHPRC		DEC 17 2014 1130	Received By	B.E. Briggs CHPRC		DEC 17 2014 1130
Relinquished By	B.E. Briggs CHPRC		DEC 17 2014 1400	Received By	FEDEX		Date/Time
Relinquished By	Fedex		Date/Time	Received By	H. Taylor		121814 0930
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S	= Soil	DS	= Drum Solids		
SE	= Sediment	DL	= Drum Liquids		
SO	= Solid	T	= Tissue		
SL	= Sludge	WI	= Wipe		
W	= Water	L	= Liquid		
O	= Oil	V	= Vegetation		
A	= Air	X	= Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PRINTED O 9/12/2014

A-6004-842 (REV 2)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	SDG/AR/COC/Work Order: 368428
Received By: H. Taylor	Date Received: 12/8/14

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0cpm
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample contatiners < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: (Ice bags) Blue ice Dry ice None Other (describe) 2, 3 *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 130532192 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?	✓			Sample ID's and containers affected:
7	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
11	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			
14	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7801 5980 -2 8822 2697 -2 8278 5804 -3 8822 3042 -2 8404 8685-3

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials HT Date 12/8/14 Page 1 of 1

Data Review Qualifier Definitions

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 07−JAN−15

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol−condensation product	Y	Organics	Semi−Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (0rganics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely preformed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post−digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

Laboratory Certifications

List of current GEL Certifications as of 07 January 2015

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−12−00283, P330−12−00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122014−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68−00485
Plant Material Permit	PDEP−12−00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235−14−9
Utah NELAP	SC000122014−16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780−12
Wisconsin	999887790

Volatile Analysis

Case Narrative

Method/Analysis Information

Procedure:	**Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method:	SW846 8260C
Analytical Batch Number:	1445277

Sample Analysis

The following client and quality control samples were analyzed to complete this SDG using the methods referenced in the Analysis Information section:

Sample ID	Client ID
363428001	B2Y452
1203232867	Method Blank (MB)
1203232868	Laboratory Control Sample (LCS)
1203232870	363428001(B2Y452) Post Spike (PS)
1203232872	363428001(B2Y452) Post Spike Duplicate (PSD)

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

The data results reported met all SOP and method criteria, unless otherwise discussed below.

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV# 21.

Calibration Information

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the Calibration History report located in the Standard Data section of the data package. The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an industry shortage.

Initial Calibration
All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification Requirements
The calibration verification standard requirements were not all met. There were no positive results for any of the

analytes that were outside the calibration criteria. The results are reported.

Quality Control (QC) Information

Blank (MB) Statement
The blank analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
Surrogate recoveries in all client and quality control samples were within the acceptance limits.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

QC Sample Designation
Sample 363428001 (B2Y452) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement
The spike 1203232870 (B2Y452PS) recoveries were not all within the acceptance limits.

Matrix Spike Duplicate (PSD) Recovery Statement
The spike duplicate 1203232872 (B2Y452PSD) recoveries were not all within the acceptance limits.

Relative Percent Difference (RPD) Statement
The RPDs between the matrix spike pair met the acceptance limits.

Internal Standard (ISTD) Acceptance
The internal standard responses in all client and quality control samples met the required acceptance criteria.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Preservation and Integrity
All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions
The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis
Re-analyses were not required for samples in this SDG.

Miscellaneous Information

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator’s signature and title. The

signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation
The following DER was generated for this SDG: 1372054.

Manual Integrations
Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

TIC Comment
Tentatively identified compounds (TIC) were not required for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Residual Chlorine
Residual Chlorine was not detected in any of the samples in this SDG.

System Configuration

The Volatile-GC/MS analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOA2.I	Agilent 7890/5975 GC/MS w/ OI Eclipse/Archon Autosampler	HP7890N/HP5975C	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL363428 GEL Work Order: 363428

The Qualifiers in this report are defined as follows:

J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated

T Spike and/or spike duplicate sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Erin Haubert **Name: Erin Haubert**

Date: 12 JAN 2015 **Title: Data Validator**

Sample Data Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: **CHPRC SAF X15-004**

Report Date: January 12, 2015

Client Sample ID: B2Y452
Sample ID: 363428001
Matrix: WATER
Collect Date: 17-DEC-14 10:05
Receive Date: 18-DEC-14
Collector: Client

Project: CPRC0X15004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
8260VOA_GCMS: COMMON "As Received"											
1,1,1-Trichloroethane 71-55-6	U	0.00	0.300	5.00	ug/L	1	ACJ	12/20/14	1706	1445277	1
1,1,2-Trichloroethane 79-00-5	U	0.00	0.300	5.00	ug/L	1					
1,1-Dichloroethane 75-34-3	U	0.00	0.300	10.0	ug/L	1					
1,1-Dichloroethylene 75-35-4	U	0.00	0.300	10.0	ug/L	1					
1,2-Dichloroethane 107-06-2	U	0.00	0.300	5.00	ug/L	1					
2-Butanone 78-93-3	U	0.00	3.00	10.0	ug/L	1					
4-Methyl-2-pentanone 108-10-1	U	0.00	3.00	10.0	ug/L	1					
Acetone 67-64-1	TU	0.00	3.00	20.0	ug/L	1					
Benzene 71-43-2	U	0.00	0.300	5.00	ug/L	1					
Carbon disulfide 75-15-0	U	0.00	1.60	10.0	ug/L	1					
Carbon tetrachloride 56-23-5	U	0.00	0.300	5.00	ug/L	1					
Chlorobenzene 108-90-7	U	0.00	0.300	5.00	ug/L	1					
Chloroform 67-66-3	U	0.00	0.300	5.00	ug/L	1					
Ethylbenzene 100-41-4	U	0.00	0.300	5.00	ug/L	1					
Methylene chloride 75-09-2	J	1.90	1.60	5.00	ug/L	1					
Tetrachloroethylene 127-18-4	U	0.00	0.300	5.00	ug/L	1					
Toluene 108-88-3	U	0.00	0.300	5.00	ug/L	1					
Trichloroethylene 79-01-6	U	0.00	0.300	5.00	ug/L	1					

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: **CHPRC SAF X15-004**

Report Date: January 12, 2015

Client Sample ID: B2Y452 Project: CPRC0X15004
Sample ID: 363428001 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics										
8260VOA_GCMS: COMMON "As Received"										
Vinyl chloride 75-01-4	U	0.00	0.300	10.0	ug/L	1				
Xylenes (total) 1330-20-7	U	0.00	0.300	10.0	ug/L	1				

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260C	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	8260VOA_GCMS: COMMON "As Received"	49.7 ug/L	50.0	99.4	(77%-123%)
Bromofluorobenzene	8260VOA_GCMS: COMMON "As Received"	53.0 ug/L	50.0	106	(80%-120%)
Toluene-d8	8260VOA_GCMS: COMMON "As Received"	50.2 ug/L	50.0	100	(80%-120%)

Quality Control Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: January 12, 2015

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **363428**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1445277											
QC1203232868 LCS											
1,1,1-Trichloroethane	50.0			40.0	ug/L		79.9	(70%-130%)	ACJ	12/20/14	12:34
1,1,2-Trichloroethane	50.0			40.8	ug/L		81.6	(70%-130%)			
1,1-Dichloroethane	50.0			39.9	ug/L		79.7	(70%-130%)			
1,1-Dichloroethylene	50.0			37.8	ug/L		75.6	(70%-130%)			
1,2-Dichloroethane	50.0			39.1	ug/L		78.2	(70%-130%)			
2-Butanone	250			259	ug/L		104	(70%-130%)			
4-Methyl-2-pentanone	250			203	ug/L		81.2	(70%-130%)			
Acetone	250			252	ug/L		101	(70%-130%)			
Benzene	50.0			40.0	ug/L		79.9	(70%-130%)			
Carbon disulfide	250			196	ug/L		78.4	(70%-130%)			
Carbon tetrachloride	50.0			40.8	ug/L		81.7	(70%-130%)			
Chlorobenzene	50.0			40.3	ug/L		80.6	(70%-130%)			
Chloroform	50.0			39.6	ug/L		79.1	(70%-130%)			
Ethylbenzene	50.0			41.1	ug/L		82.1	(70%-130%)			
Methylene chloride	50.0			39.9	ug/L		79.7	(70%-130%)			
Tetrachloroethylene	50.0			39.5	ug/L		79	(70%-130%)			
Toluene	50.0			40.3	ug/L		80.7	(70%-130%)			
Trichloroethylene	50.0			40.8	ug/L		81.6	(70%-130%)			
Vinyl chloride	50.0			44.4	ug/L		88.8	(70%-130%)			
Xylenes (total)	150			122	ug/L		81.2	(70%-130%)			

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: **363428**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1445277											
**1,2-Dichloroethane-d4	50.0			51.3	ug/L		103	(77%-123%)	ACJ	12/20/14	12:34
**Bromofluorobenzene	50.0			50.5	ug/L		101	(80%-120%)			
**Toluene-d8	50.0			50.7	ug/L		101	(80%-120%)			
QC1203232867 MB											
1,1,1-Trichloroethane			U	0.300	ug/L					12/20/14	14:35
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Ethylbenzene			U	0.300	ug/L						
Methylene chloride			U	1.60	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						

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QC Summary

Workorder: **363428**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1445277											
Vinyl chloride				U	0.300	ug/L				ACJ	12/20/14 14:35
Xylenes (total)				U	0.300	ug/L					
**1,2-Dichloroethane-d4	50.0				51.9	ug/L		104	(77%-123%)		
**Bromofluorobenzene	50.0				51.5	ug/L		103	(80%-120%)		
**Toluene-d8	50.0				48.7	ug/L		97.5	(80%-120%)		
QC1203232870 363428001 PS											
1,1,1-Trichloroethane	50.0	U	0.00		41.7	ug/L		83.3	(70%-130%)		12/20/14 20:06
1,1,2-Trichloroethane	50.0	U	0.00		41.7	ug/L		83.3	(70%-130%)		
1,1-Dichloroethane	50.0	U	0.00		44.1	ug/L		88.2	(70%-130%)		
1,1-Dichloroethylene	50.0	U	0.00		41.1	ug/L		82.2	(70%-130%)		
1,2-Dichloroethane	50.0	U	0.00		40.5	ug/L		81	(70%-130%)		
2-Butanone	250	U	0.00		198	ug/L		79.2	(70%-130%)		
4-Methyl-2-pentanone	250	U	0.00		217	ug/L		87	(70%-130%)		
Acetone	250	TU	0.00	T	132	ug/L		52.8*	(70%-130%)		
Benzene	50.0	U	0.00		43.5	ug/L		87.1	(70%-130%)		
Carbon disulfide	250	U	0.00		223	ug/L		89.3	(70%-130%)		
Carbon tetrachloride	50.0	U	0.00		43.1	ug/L		86.3	(70%-130%)		
Chlorobenzene	50.0	U	0.00		41.4	ug/L		82.7	(70%-130%)		
Chloroform	50.0	U	0.00		42.9	ug/L		85.8	(70%-130%)		
Ethylbenzene	50.0	U	0.00		43.1	ug/L		86.2	(70%-130%)		
Methylene chloride	50.0	J	1.90		43.7	ug/L		83.6	(70%-130%)		
Tetrachloroethylene	50.0	U	0.00		39.7	ug/L		79.3	(70%-130%)		

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QC Summary

Workorder: 363428

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1445277											
Toluene	50.0	U	0.00		42.2	ug/L		84.5	(70%-130%)	ACJ	12/20/14 20:06
Trichloroethylene	50.0	U	0.00		42.3	ug/L		84.7	(70%-130%)		
Vinyl chloride	50.0	U	0.00		49.8	ug/L		99.6	(70%-130%)		
Xylenes (total)	150	U	0.00		128	ug/L		85.4	(70%-130%)		
**1,2-Dichloroethane-d4	50.0		49.7		49.6	ug/L		99.2	(77%-123%)		
**Bromofluorobenzene	50.0		53.0		49.1	ug/L		98.2	(80%-120%)		
**Toluene-d8	50.0		50.2		49.8	ug/L		99.6	(80%-120%)		
QC1203232872 363428001 PSD											
1,1,1-Trichloroethane	50.0	U	0.00		39.7	ug/L	4.77	79.4	(0%-20%)		12/20/14 20:36
1,1,2-Trichloroethane	50.0	U	0.00		41.8	ug/L	0.240	83.5	(0%-20%)		
1,1-Dichloroethane	50.0	U	0.00		40.6	ug/L	8.33	81.2	(0%-20%)		
1,1-Dichloroethylene	50.0	U	0.00		38.7	ug/L	6.01	77.4	(0%-20%)		
1,2-Dichloroethane	50.0	U	0.00		39.3	ug/L	3.16	78.5	(0%-20%)		
2-Butanone	250	U	0.00		188	ug/L	5.19	75.1	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		211	ug/L	2.92	84.5	(0%-20%)		
Acetone	250	TU	0.00	T	126	ug/L	4.47	50.5*	(0%-20%)		
Benzene	50.0	U	0.00		41.2	ug/L	5.45	82.5	(0%-20%)		
Carbon disulfide	250	U	0.00		204	ug/L	8.98	81.7	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		40.5	ug/L	6.24	81.1	(0%-20%)		
Chlorobenzene	50.0	U	0.00		40.6	ug/L	1.88	81.2	(0%-20%)		
Chloroform	50.0	U	0.00		40.4	ug/L	6.10	80.7	(0%-20%)		
Ethylbenzene	50.0	U	0.00		41.5	ug/L	3.78	83	(0%-20%)		

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QC Summary

Workorder: 363428

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS												
Batch 1445277												
Methylene chloride	50.0	J	1.90		41.4	ug/L	5.50	78.9	(0%-20%)	ACJ	12/20/14	20:36
Tetrachloroethylene	50.0	U	0.00		39.3	ug/L	1.01	78.5	(0%-20%)			
Toluene	50.0	U	0.00		41.1	ug/L	2.74	82.2	(0%-20%)			
Trichloroethylene	50.0	U	0.00		41.3	ug/L	2.61	82.5	(0%-20%)			
Vinyl chloride	50.0	U	0.00		48.9	ug/L	1.74	97.9	(0%-20%)			
Xylenes (total)	150	U	0.00		123	ug/L	3.95	82.1	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		49.7		49.1	ug/L		98.2	(77%-123%)			
**Bromofluorobenzene	50.0		53.0		51.0	ug/L		102	(80%-120%)			
**Toluene-d8	50.0		50.2		50.1	ug/L		100	(80%-120%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (0rganics only)

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QC Summary

Workorder: **363428**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

GEL Laboratories LLC
Form GEL-DER

DER Report No.: 1372054
Revision No.:

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
12-JAN-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
VOA GC/MS	SW846 8260C	Liquid	CPRC
Batch ID:	**Sample Numbers:**		
1445277	See Below		

Potentially affected work order(s)(SDG): 363428(GEL363428),363442(GEL363442),363479(GEL363479),363482(GEL363482)

Application Issues:

Failed Recovery for MS/PS

Failed CCV or CCB

Failed Recovery for MSD/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. QC samples 1203232870MS and 1203232872MSD were below the spike recovery acceptance limits for Acetone. 2. The CCV was above the 8260C acceptance limits of +/-20% for the following analytes: Acetone +20.71% 2-Butanone +30.07% 2-Hexanone +27.41%	1. Narrate and report data. The MS/MSD recovered in a similar manner and passed %RPD. 2. Narrate and report data. These analytes are biased high and were not detected in the samples.

Originator's Name:

Amy Jamison 12-JAN-15

Data Validator/Group Leader:

Erin Haubert 12-JAN-15